

REMARKS/ARGUMENTS

Status of the Prosecution:

Claims 1-13 are currently pending and under examination. This amendment addresses issues raised by the examiner in the Office Action dated September 8, 2003. Applicants have amended claims 1, 6, and 12 herein. The abstract has also been amended and minor typographical errors have been corrected in the specification as requested by the examiner.

Objections and Informalities

As indicated above, the abstract has been amended to conform with the formal requirements. The specification was objected to for the alleged informality of reciting the term "incendive". The specification has been amended to change this term to the examiner's preferred term "incendiary". Applicant respectfully requests that these objections be withdrawn.

Claims 1 and 6 stand objected to for the recitation of the word "incendive" and recitation of the phrase "the said voltage". The claims have been amended to correct the informalities. Accordingly Applicant respectfully requests that the objection to the claims be withdrawn.

The Claims are Not Anticipated by the Mukli Patent.

Claims 1 and 3-12 stand rejected under 35 U.S.C. § 102(b) as allegedly anticipated by US Patent No. 4,638,396 to Mukli *et al.* ("Mukli").

Mukli does not anticipate the claims. The present invention is directed to methods of providing intrinsically safe circuits in which a voltage is supplied via a supply circuit to a load, which comprises sensing the voltage at the load and, in the event that a decrease in the voltage is detected, disconnecting the load in a manner whereby a series break in the supply circuit upstream from the point of disconnection, the series break causing the voltage decrease, is prevented from becoming incendiary.

Applicant's invention is distinguished from Mukli *inter alia*, in that the protection circuit of the invention provides protection for the circuit upstream of the protection device, rather than downstream, such as is taught by the Mukli reference and other art cited by the examiner. The invention involves detecting falling voltage to render the circuit non-incendiary, rather than merely serving to limit current. The Office Action apparently rejects the claims on the broad proposition that anything that detects an under-voltage and switches off a load anticipates the instant claims, in fact the claims differ substantially from prior art devices and methods.

The circuit disclosed in Mukli is intended to protect battery-powered equipment used in hazardous areas from producing incendiary sparks or hot surfaces. The circuit comprises a crude, but fast, current limit obtained by Zener-clamping the gate-source voltage of the series FET (CR4 and Q1 in Fig. 2). Also SCR2 provided a current trip function which is intended to protect Q1 from continuous overload, and with a time delay arising due to C5 and C6, and R15.

The disclosure referred to at Column 2, lines 4-14 of Mukli is not analogous to the aspect of the present invention "in such a manner so as to prevent any series break in the supply circuit from becoming incendive". The amendment to claim is intended to more fully

emphasize the differences which may not have been fully appreciated. It is also respectfully submitted that any such comparison of this limited disclosure in Mukli to the instant invention is a vast overemphasis of the relevance of the Mukli patent, since on closer review, there is no disclosure, either explicit or implicit, in Mukli of the claimed feature.

The actual method taught by Mukli to prevent sparking from occurring is simply to limit the energy supply to the load to levels below which incendiary sparking will occur. See Mukli, column 2, lines 40-43.

The purpose of the load-sensor taught by Mukli is merely to “un-power” the remaining protection circuitry when there is no load present so as to save battery drain. See in particular the Mukli disclosure at column 2, lines 4-8.

Thus one fundamental difference between the present invention and that of Mukli is that the Applicant’s invention expressly protects the upstream wiring, whereas Mukli merely protects against sparking and thermal effects downstream of the protection device. By providing for upstream protection, the present invention has the advantage of being able to disconnect the load so as to quench the spark arising such that the protection offered is different from that of Mukli. The present invention sense and reacts to a developing spark and limits the energy in that spark to below an incendiary level. Thus, the instant invention is concerned with sensing the spark voltage and not merely limiting the downstream voltage and current available to the load.. As a result the level of power that can be delivered to the load under normal operating conditions can safely exceed the levels normally considered incendiary, and thus, higher power levels can therefore be provided in accordance with Applicant’s invention.

Since the present invention provides monitoring for a potentially incendiary condition, and quenching the spark developing in a manner that is different from the mere voltage and current limiting arrangements of the prior art. Accordingly, since the Mukli reference does not teach each and every limitation of the instant claims as amended, when properly construed, Mukli cannot anticipate those claims. In view of the above, Applicant respectfully request reconsideration and withdrawal of the rejection under 35 U.S.C. § 35 U.S.C. § 102(b).

The Claims are Patentable over the Cited Art

Claim 8 stands rejected under 35 U.S.C. § 35 U.S.C. § 103(a) as allegedly unpatentable over the Mukli patent. As discussed above, Mukli does not teach a method or an apparatus which protects upstream components, and as such lacks elements of the instant claims. Applicants respectfully traverse. Assuming *arguendo* that Mukli discloses a sensing means which makes the Applicants choice of a Zener diode obvious, Mukli does not render the claim obvious because it does not disclose each and every limitation of the underlying claim. Thus, the *prima facie* case of obviousness must fall.

Accordingly, the Applicant respectfully requests reconsideration and withdrawal of the rejection under 35 U.S.C. § 35 U.S.C. § 35 U.S.C. § 103(a).

Claims 2 and 13 stand rejected under 35 U.S.C. § 35 U.S.C. § 103(a) as allegedly unpatentable over the Mukli patent in view of Brooks *et al.* (US Patent No. 6,034,611) (“Brooks”). The Office Action alleges that Brooks teaches a protection circuit in which a plurality of loads are protected by a plurality of protection circuits. Since the disclosure in

Mukli concededly does not provide a plurality of modules each including a load, the Office Action seeks to cure this deficiency with the teachings of Brooks.

For the reasons cited above, Mukli does not disclose each and every limitation of the underlying claim. Furthermore, Brooks can not remedy the shortcomings of Mukli.

Brooks can not be considered to be relevant to the instant invention. Brooks is directed to conventional AC power distribution panel systems with each output protected by a conventional over-current device, such as is found in a domestic consumer unit. The addition proposed in Brooks to such a standard unit is the provision of a surge arrestor 10 in Figure 1A, which serves to prevent ringing on the supply circuit caused by a fault on one spur, from leading to an over-current device on another spur tripping. Brooks is thus directed at a different problem altogether. It is respectfully submitted that the disclosure of a mere modified domestic consumer unit as found in Brooks would not be considered relevant to a skilled artisan considering the how to solve the problem of a specific protection device for intrinsically safe circuits as solved by the Applicant.

In view of the substantial deficiencies in Mukli, and the doubtful relevance of Brooks to the skilled artisan, reconsideration is respectfully requested. Applicant further respectfully requests withdrawal of the rejection under 35 U.S.C. § 103(a).

Conclusion

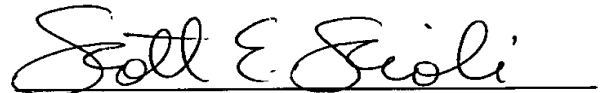
All of the claims under examination are now in condition for allowance. Applicant respectfully requests an early and favorable action in that regard. The Examiner is invited to contact the Applicant's undersigned representative, particularly as needed to clarify any

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outstanding issues prior to allowance of the claims, at 215-557-5986 or by email at
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Respectfully Submitted,

A handwritten signature in cursive script, reading "Scott E. Scioli", written over a horizontal line.

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